Claims:

1. A method for allocating pending requests for data packet transmission at a number of inputs to a number of outputs of a switching system in successive time slots, comprising a matching method that performs the allocation of the pending requests, the matching method including a number of steps for incrementally allocating the requests, wherein as a result of each step a matching information is provided, wherein in each time slot a request information is provided, the request information indicating the data packets at the inputs requesting transmission to respective outputs,
the matching method comprising the steps of:
- providing a first request information in a first time slot;
- performing a first step in the first time slot depending on the first request information to obtain a first matching information;
- providing a last request information in a last time slot successive the first time slot;
- performing a last step in the last time slot depending on the last request information and depending on the first matching information to obtain a final matching information; and
- assigning the pending data packets at the number of inputs to the number of outputs in dependence on the final matching information.

2. Method according to claim 1, wherein the matching method is performed in a first and a second thread, which are shifted, so that the first step of the second thread and a second step of the first thread are performed in the same time slot.

3. Method according to claim 1, wherein between the first step and the last step of the matching method a number of intermediate steps are performed in successive intermediate time slots between the first time slot and the last time slot, wherein a respective intermediate request information is provided in the respective intermediate time slot;
wherein each of the steps provides an intermediate matching information to a successive intermediate step depending on an intermediate matching information from the preceding intermediate step and depending on a request information of the respective intermediate time slot,
wherein the first step provides the first matching information to the first of the intermediate steps, and
wherein the last step receives the intermediate matching information from the last of the intermediate steps.

4. Method according to claim 3, wherein the performing of one of the intermediate and the last steps includes the steps of:
- modifying the respective intermediate and last request information depending on the respective first and intermediate matching information provided by the preceding step; and
- performing the one step depending on the modified respective request information to obtain a partial matching information.

5. Method according to claim 4, wherein the one step further includes the step of:
- merging the intermediate matching information provided by the preceding step and the partial matching information to obtain the respective intermediate or final matching information.

6. Method according to claim 4, wherein the partial matching information is modified depending on at least one of the following:
- the matching information provided by any of the steps;
- the partial matching information of any of the steps;
- the pending request information;
- a position information indicating position of the respective step within the steps of the matching method.

7. Method according to claim 3, wherein each of the first, intermediate and last request information depends on the number of pending requests at each of the inputs with respect to each of the outputs.

8. Method according to one of the claims 3, wherein the request information is selectively provided to the first, intermediate and last steps depending on at least one of:
- the matching information obtained by the respective step of the matching method;
- the current number of pending requests of each input relative to each of the outputs; and
- a position information indicating a position of the respective step within the steps of the matching method.

9. An allocation device for allocating pending requests for data packet transmission at a number of inputs to a number of outputs of a packet switching device in successive time slots,
wherein the allocation of the pending requests is performed by a matching method that includes a number of steps for incrementally allocating the requests of the data packets, the device comprising:
- a first allocation stage for performing a first step of the matching method in a first time slot depending

on a first request information provided in the first time slot to obtain a first matching information;
- a last allocation stage for performing a last step of the matching method in a last time slot depending on a last request information provided in the last time slot and depending on the first matching information to obtain a final matching information,
wherein the respective provided request information indicates the data packets at the inputs requesting transmission to the respective outputs; and
- an allocation unit to allocate the pending data packets at the number of inputs to the number of outputs in dependence on the final matching information.

10. Allocation device according to claim 9, further comprising:
- one or more intermediate allocation stages which are located between the first allocation stage and the last allocation stage and are connected in a series within each other and with the first and the last allocation stage, and for performing a number of intermediate steps of the matching method in successive intermediate time slots between the first time slot and the last time slot, wherein each of the allocation stages provides an intermediate matching information to a successive intermediate allocation stage wherein the intermediate matching information depending on an intermediate matching information received from the preceding intermediate allocation stage and depending on an provided intermediate request information of the respective intermediate time slot;
wherein the first allocation stage provides the first matching information to the first of the intermediate allocation stages; and
wherein the last allocation stage receives the intermediate matching information from the last of the intermediate allocation stages.

11. Allocation device according to claim 10, wherein at least one of the allocation stages comprises:
- a prefilter for modifying the respective intermediate and last request information depending on the respective first and intermediate matching information provided by the preceding allocation stage;
- an allocator for performing the step of the matching method of the respective allocation stage depending on the filtered respective request information to obtain a partial matching information.

12. Allocation device according to claim 11, wherein at least one of the allocation stages further comprises:
- a merging unit for merging the intermediate matching information provided by the preceding allocation stage and the partial matching information to obtain the respective intermediate or final matching information.

13. Allocation device according to claim 11, wherein at least one of the allocation stages further comprises:
- a postfilter unit for modifying the partial matching information depending on at least one of the following:
- the matching information provided by any of the allocation stages;
- the partial matching information of any of the allocation stages;
- the pending request information in the respective time slot; and
- a position information indicating the position of the respective allocation stage within the series of allocations stages.

14. Allocation device according claims 10 further comprising:
- a request counter to provide the first, intermediate and last request information depending on the number of pending requests at each of the inputs with respect to

each of the outputs in the respective first, intermediate and last time slot.

15. Allocation device according to claims 10, further comprising:

- a selection unit to selectively provide the request information to the first, intermediate and last allocation stage depending on at least one of:
- the matching information obtained by the respective step of the matching method;
- the current number of pending requests of each input relative to each of the outputs; and
- a position information indicating position of the respective step within the steps of the matching method.

16. A computer program element comprising program code means, when said program is run on a computer, for allocating pending requests for data packet transmission at a number of inputs to a number of outputs of a switching system in successive time slots by a matching method that performs the allocation of the pending requests, the matching method including a number of steps for incrementally allocating the requests, wherein as a result of each step a matching information is provided, wherein in each time slot a request information is provided, the request information indicating the data packets at the inputs requesting transmission to respective outputs, the matching method comprising the steps of:

- providing a first request information in a first time slot;
- performing a first step in the first time slot depending on the first request information to obtain a first matching information;
- providing a last request information in a last time slot successive the first time slot;
- performing a last step in the last time slot depending on the last request information and depending on the first matching information to obtain a final matching information; and
- assigning the pending data packets at the number of inputs to the number of outputs in dependence on the final matching information.

17. A computer program product directly loadable into the internal memory of a digital computer, comprising software code portions, when said program product is run on a computer, for allocating pending requests for data packet transmission at a number of inputs to a number of outputs of a switching system in successive time slots by a matching method that performs the allocation of the pending requests, the matching method including a number of steps for incrementally allocating the requests, wherein as a result of each step a matching information is provided, wherein in each time slot a request information is provided, the request information indicating the data packets at the inputs requesting transmission to respective outputs, the matching method comprising the steps of:

- providing a first request information in a first time slot;
- performing a first step in the first time slot depending on the first request information to obtain a first matching information;
- providing a last request information in a last time slot successive the first time slot;
- performing a last step in the last time slot depending on the last request information and depending on the first matching information to obtain a final matching information; and
- assigning the pending data packets at the number of inputs to the number of outputs in dependence on the final matching information.